DOCUMENT RESUME

ED 094 827 JC 740 283

AUTHOR	MacQueen, Peggy
TITLE	An Evaluation of the Educationally Disadvantaged Students' Performance in the Biology 101 Multi-media Approach at Polk Community College.
INSTITUTION	Nova Univ., Fort Lauderdale, Fla.
PUB DATE	25 Aug 73
NOTE	21p.; Practicum presented to Nova University in partial fulfillment of requirements for Doctor of Education degree
EDRS PRICE	MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS	*Academic Achievement; Biology Instruction; College Curriculum; *College Students; *Community Colleges; Disadvantaged Youth; *Educationally Disadvantaged; *Multimedia Instruction; Post Secondary Education; Practicums
IDENTIFIERS	Florida; *Polk Community College

ABSTRACT

To determine whether the educationally disadvantaged student could achieve academic success in Polk Community College's multimedia Biology 101 course, 44 students whose stanine scores were between one and four on the Florida Twelfth Grade Performance Test were studied. Academic success was defined as receiving a grade of C or above in the course. The study covered three terms. The results of the study showed that 20 of the disadvantaged students were able to pass the multimedia course; none of the 20 students made B or above grades. It is concluded that the multimedia approach to teaching college biology was successful in improving grades and allowing students to earn credit who previously would have been placed in noncredit courses. (DB)

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRO
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGIN
ATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRE
SENT OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY

ED 094827

AN EVALUATION OF THE EDUCATIONALLY DISADVANTAGED STUDENTS' PERFORMANCE IN THE BIOLOGY 101 MULTI-MEDIA APPROACH AT POLK COMMUNITY COLLEGE

CURRICULUM MODULE

BY

PEGGY MACQUEEN

A PRACTICUM PRESENTED TO NOVA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF EDUCATION

AUGUST 25, 1973

JC 740 282

Content

1. Introductory material

A. Title----------1
B. Table 1 ----------16

2. Statement of problem----------1
and Hypothesis

3. Background----------2

4. Significance of study ----------6

5. Review of literature----------7

6. Basic assumptions----------9

7. Definition of terms----------13

8. Limitation of study----------14

9. Procedure of collecting data----------15

10. Presentation of data----------16

11. Analysis of data----------16

12. Summary and conclusions----------17

13. Bibliography----------19

A. Title

An evaluation of the educationally disadvantaged student's performance in the Biology 101 Multi-media approach at Polk Community College.

B. Statement of Problem

Do the educationally disadvantaged students achieve academic success in the Multi-media Biology 101?

C. Hypothesis

The educationally disadvantaged students will be able to achieve academic success in the Multi-media Biology 101.

Background

The philosophy of the community junior college is closely tied to the principle that each individual should have the opportunity to progress as far as his interests and abilities will permit. Two thirds of the students who enter our junior colleges announce that they intend to transfer to senior institutions, in actuality, fewer than one-third continue their formal education beyond junior college graduation.

Many students do not survive the first year of college. Educationally disadvantaged students form a large percentage of the drop outs. Poor reading ability, and past failures combine together to make a difficult climate for success.

About one-fourth of every class is made up of educationally disadvantaged students at Polk Community College. These are the students whose stanine score is between one and four on the Florida Twelfth Grade Performance Test. If the student has not taken the FTGPT, he then takes the College Qualification Test (CQT).

The college set up a Directed Studies divison to develop a specialized program for these students, with three major areas of instruction: Guided Studies, Advanced Studies, and Certificate Programs. This paper will deal mainly with Guided Studies program

in the biological sciences.

In 1966, special basic studies classes were set up in English, Reading, and Natural Sciences for students with stanine scores one through four on the FTGPT. Any score that was within this range in a given subject matter opened the option to the student of entering these special courses. They were non-credit courses designed to upgrade the deficient students's ability in a given discipline so that he could enter the college level course with some chance of success.

These classes were called Guided Studies in the college catalogue and reached their peak of enrollment in 1969. Two classes were given in biology each term from 1968 through 1971. It became evident to all of the staff that the students were not taking the classes seriously and enrollment began to drop in 1970. Gradually the student came to believe that these courses were identifying him as an undesirable student.

The Biology Department decided to develop a new way of teaching so that all students could be taught in the same classes and the Guided Studies classes were eliminated.

The answer to the educationally disadvantaged student seemed to be in developing an individualized learning system in which the students would have time

to work at their own speed. The new system was termed multi-media biology and was begun as an experimental program in 1970. In the 1972-73 school year it was implemented in all of the biology classes at Polk Community College.

Previous to this time the lecture method had been used in teaching biology in three hour credit courses. The laboratory had been a sparate one hour course taken by about half of the students in the class. Often the student had two different teachers for these courses. Evaluation covered large blocks of material every two or three weeks. The educationally disadvantaged students were not able to cope with the mass of material presented, especially as they read slowly with little comprehension.

The course was developed into a four hour course requiring everyone take the laboratory portion. One teacher was responsible for the student's work. The course was divided into fourteen units of one week each. Each unit consisted of a set of objectives, a work sheet, an audio-tape or script, and a self-test. The activities in the laboratory required about two hours of time for the average student in the class. The laboratory was open to the student from eight

to three during the day, with an instructor present to help the student. Night classes were also taught in this way with carrolls available to day students who wanted to work at night.

Each week, a new unit was introduced to the class, covering material to be studied the following week. A short test was given on the previous week's work, and a film was shown dealing with subject delt with in the coming week. Many beautiful, and meaningful films are available on subjects such as heredity, photosynthesis, and evolution that add a great deal to the course.

At the end of the week students met for discussion period on the topic of the week. Questions were asked by students in the class discussion when the objectives were used as a bases for a review of the unit of the week. The formal lecture was eliminated and the cassett tapes in the laboratory were the main source of information for the student. The text was used as a supplementary source of information. By combing the lecture and laboratory experience in one scrip, the student began doing something meaningful. He was not passively listening to a lecture, so the educationally disadvantaged student became more interested in what was happening. These students are doers

rather than listeners, and they need help and time to develop their confidence in the laboratory since they probably have never had a laboratory experience before.

Completion of all units was required. A passing grade was obtained by averaging the results of all unit tests and work sheets from the laboratory. Upon student's requests, retests, were given on units that had been failed. A grade of incomplete was given to students who did not complete the course units. They were allowed to reenter the course the following semester to complete the units they had missed. However, very few students took advantage of this option in the course during the first year of its implementation. On the completion of all the units a grade was given to the student with an incomplete.

Significance of the study

A new method of teaching had been developed over a period of three years 1970-73 for the general education biology 101 student. The traditional lecture method with three class meetings and a separate laboratory once a week had been surplanted by an indivi dualized multi-media biology course.

A year after, the course's implementation the biology department did not know if the educationally disadvantaged student had achieved any success in

The question of whether special classes for this group of students was needed,or had they been able to succeed in the multi-media biology?

The present study is formulated to evaluate the achievement of these students within the first full years (1972-73) implementation of the multi-media course for all the sections of biology 101.

With this information, the program could be modified or enriched according to the needs of the students. The data collected can be used to guide the biology department in deciding if the program should be continued for these students or discontinued.

Review of Related Literature

It is interesting to review the literature dealing with the low achiever. In Roueche's and Pitman's book, A Modest Proposal-Students Can Learn (1972 p.7), an excellent summary is made concerning the type of student found in the junior college.

" Community college students have different needs from those in their four year counterparts. 'poor' students are in the majority. They cut across racial, ethnic and class lines. The open-door policy produces a heterogeneous student body, representative of the total population. Community colleges must expect and provide for students from the lower two-thirds

of the academic spectrum--an important yet frequently ignored fact".

These same authors go on to give a second concept about these same students that involves new ways of teaching. " A major misconception about community college students has developed because educators have failed to recognize that the standardized achievement tests and standardized intelligence test customarily used in comparing the two-year and four year student. However, the'scholastic aptitude' that is being measured by these tests is the rate of learning rather than the capacity for learning. Community college students generally learn at slower rates than four year students, but it is unjustified to conclude that their learning capacity is less."

The student is not the only factor in the success of a program. The attitude of the teacher toward the program makes the difference between success and failure of the disadvantaged student. Roueche (1968 p.56) states that " Sociological research has shown that there is a'peck order' of teachers in most departments, based almost entirely on senority and tenure at the institution. The typical junior college teacher is a subject matter specialist. Therefore, to teach a remedial or developmental course does not identify him

with higher education, where as teaching specialized and advanced courses afford instructors personal and professional prestige. Many indicate that low achieving students are of no concern to them.

The teacher is without question, the most important element in the success of a remedial program."

The ideas expressed above are in essence what happened in the biology department at Polk Community College. The guided studies classes were looked down on by students as well as faculty members and were doomed to failure by both elements. It was evident that a change had to come about.

The literature on the development of audio-tutorial programs deals with the students in the program but does not single out the disadvantaged student. Many of the students within the junior colleges need extra help so that studies done on the success of the audio-tutorial programs would be comparable to the present study.

Multi-media approach

Many individualized programs have been developed in the sciences starting with the audio-tutorial system developed by Sam Postlethwait (1964) at Purdue in 1961. The audio-tutorial system consisted of an individualized botany laboratory with a large lecture section and a small discussion meeting for each student.

In his book The Audio-Tutorial Approach To Learning discussing the individualized laboratory approach to learning, he describes the interaction that took place between students and teachers in the laboratory. Individual differences of students could be delt with in such an enviornment.

As a part of this study, fifteen colleges having an AT program were contacted to assess evaluations they had made of their programs and the educationally disadvantaged student. None had made a study of this group of students within the AT program. Some had made a study of the overall grades of students within the programs. Others indicated they had not had time to evaluate what had been done. Summarized below are the results obtained:

McLennan Community College, Texas
Audio-Tutorial system compared to the convetional biology had:

8%fewer D and F grades in the AT
8% fewer drops in the AT
16% more A, B, C, in the AT

University of Guelph, Guelph, Ontario,Canada
biology course 1973

Old method of lecture 30% failure
New method AT 3% failure
Old method of lecutre 5% A's
New method AT 20% A's

Jackson State Community College (154 students)
(Burgess, 1972), Paul Tracy

Drop in D's and F's of 20% in M-M
Enrollment doubled in the biology course after the new method has been established.

Polk Community College 1969-73
Drop in D's and F's of 14% in M-M
The same number of drops in both systems of 14%
I4% more A and B in the M-M program

Those colleges that had not evaluated their programs expressed the belief that they were now providing a better climate for the student to learn biology. Kemp in his book, Teaching The One And Many (1967,p32) at San Jose State College in California states: "The responsibility for learning the material has been given directly to the student. If a student fails to complete the work necessary to satisfy an objective he cannot expect to rank high on the post-test. The poorer readers can obtain information from the film clips, or from reading or listening to the script. The good student covers the basic material rapidly and is then able to take on the extra activites."

In summary, organization of good objectives and learning expierences is the key to good programs for all students. Educationally disadvantaged students need good teachers who are willing to help them on a one-to-one basis in the laboratory.

It is important to vary the activites of the student so that they are not only getting direction from a teacher on a script or tape but are also devising experiments or studies on their own. Involvment is the key element for these students.

Basic assumptions

1. The students in the biology classes are a representative sample of the general student body at Polk Community College.
2. The Florida twelfth grade test is an accurate measure of the student's level of achievement.
3. All of the students in the multi-media biology were given the same program and similar tests in the various classes.
4. Each teacher in the (1972-73) biology program gave the same objectives and general information to the students.
5. The educationally disadvataged student was not identified until after the course was completed. He received the same program the other students received.

Definition of terms

1. Educationally disadvantaged students- students receiving 1st, 2nd, 3rd,or 4th stanine's as their total score on the Florida twelfth grade test.
2. Stanine- grouping of student scores on a normal curve with five being the median score,and nine the highest grouping with one the lowest. There is a given percentage of students in each group.
3. Guided studies-non-credit classes for students that receieved 1st,2nd, 3rd,4th stanine in the natural science section on the FTGPT.
4. Traditional lecture course- The class met for three meetings a week at which time a lecture was given. Tests were scheduled every two to three weeks. Three hours credit was given for this course.
5. Traditional laboratory course- A two hour block of time, in which twenty students meet for a laboratory experience with an instructor. One hour's credit was received for this course.
6. Multi-media biology- An unscheduled laboratory and lecture experience done individually by each student in the multi-media laboratory. Directions are given on a cassett tape or script with each student working independently in the laboratory. A teacher is in the laboratory to help the student.

Each unit is made up of 5 parts
1. set of objectives
2. script or cassett tape
3. work sheet
4. self test
5. discussion groups

A test is given each week over the week's work Weekly grades are averaged to arrive at a final grade.

6. Success in biology 101 - Students receiving a grade of C in the course.
7. Florida twelfth grade placement test- A test given to all seniors high school students in the public schools of Florida. The scores are plotted on a normal curve in groupings from one to nine forming the stanine's of the student population.

Limitations of the study

The size and composition of the classes were already formed, and it was not possible to change them.

The multi-media program had only been in full operation for one year. Time is needed to refine a new system and develop several routes for different levels of students to take within the course. Only one route was available in the 1972-73 year. It consisted of the 14 units developed for the course. Poor reading ability may be one of the reasons for

low scores in biology rather than the students knowledge of the subject.

Procedure for collecting data

The stanine scores on the Florida twelfth grade placement tests were tabulated for all of the students in the biology classes in 1972-73 year. The students with scores falling within the 1-4 stanine were identified as educationally disadvantaged.

The study covers three terms fall, spring, and the first summer term of 1972-73 year. A total of 311 students were involved in these classes, and out of these students forty four were identified as being educationally disadvantaged.

The present study was formulated to evaluate the achievement of these students within the first years implementation of the course in multi-media biology.

The method used to find these students was to examine the test scores of all the students in the biology classes and identify those that fell into the educationally disadvantaged group. This was sone after the students had completed the course and their grades had been recorded.

Presentation of Data

The results of the study of the biology 101 student achievement in the multi-media biology are given below.

Table 1

Grades made by educationally disadvantaged students in biology 101 in 1972-3

Number of classes----11

Total number of students---311

Number of teachers-----3

Number of disadvantaged students---44

Grades of the disadvantaged students

A	B	C	D	W	NG	I
-	-	20	4	12	5	3

Analysis of data

It is interesting to see that almost half of the students were able to pass in the new system. Very few of the students failed by getting an NG. This grade indicated a no grade and is later changed on the record to a W or withdrawal. Instead those students who did not achieve in the system withdrew some time during the term. None of the disadvantaged students got a B or above in the course. With a non-

punitive grading system at the junior college most students withdraw from class rather than get a NG. This is true of all of the students in the biology multimedia course.

In a few instances no scores could be found for some of the students, so they could not be evaluated in this study. The number was very small however.

Summary and conclusions

The first conclusion that can be made by the findings of this study is that it is not valid to say that the educationally disadvantaged student can not learn or achieve in the classroom with higher level students. It is not necessary to set them apart in non-credit courses without credit.

If the instruction is individualized to allow for individual differences the poorer student can take the time they he needs to finish the assignment. in an open concept laboratory set up for individualized study.

The teacher is the second ingredient in this recipe. The many previous failures which this poorer student has had make him a rather fragile commodity, ready to leave the class with his first discouragment. The climate should be such that difficulty is not termed failure; only a step in learning that can be overcome.

The multi-media laboratory is not a cure all as over half of the disadvantaged students did not pass. A new system takes time to perfect and learning how to better handle students with poor backgrounds takes skill and patience.

The third ingredient essential to success is done, before the student ever gets into the class, by the counselor. No student who can not read should be placed in biology the first semester he is in the college. Time should be given to learning skills so that the student has the tools for learning.

In conclusion the multi-media biology had been successful in improving the grades and giving credit to students who would have previously been placed in noncredit courses. The element of self paced work in the laboratory plus the climate for learning that will encourage students that we class as educationally disadvantaged make the multi-media approach superior to the traditional lecture method. This student can achieve successin the multi-media biology.

Bibliography

Cain, Robert B., "Community College Studies Program", Miami-Dade Junior College, North Campus, Paper submitted to Dr Henry King Stanford in partial fulfillment of Edu:682, 1969

Kemp, Jerrold E., " Teaching the One and Many- At The Same Time",Educational Screen and Audiovisual Guide, 1967,Nov.

Postlethwait, Sam.,The Audio-Tutorial Approach to Learning. Burgess Publishing Co., Minneapolis, Minn., 1964

Riddle, P.T., Personal communication from University of Guelph,Guelph, Ontario, Canada,1973

Roueche, John E., Salvage, Redirection, or Custody. Washington, D.C., ERIC Clearinghouse for Junior College information,American Association of Junior Colleges, 1968

Roueche,John E., and John C. Pitman. A Modest Proposal Students Can Learn, San Fransico,Jossey-Bass Inc., 1972.

Tracey, Paul, Jackson State Community College, Jackson, Tenn.,Report in Audio-Tutorial System, Burgess Publishing Co., Minneapolis, Minn., 1972

UNIVERSITY OF CALIF.
LOS ANGELES

SEP 13 1974

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION